

## AERIAL NAVIGATION IN THE NEXT CENTURY

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ing bird weighs more than one thousand times its equal bulk of air. The first thing, therefore, those who were not mere cranks or dreamers had to do in their study of this subject was to address themselves to the problem of how birds, seemingly without effort and oftentimes even without the flapping of wings, manage to move through the air with perfect ease and grace.

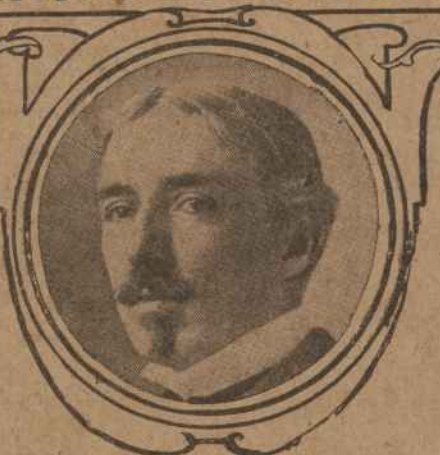
After experiments and disappointments stretching over a great many years it was finally proved that if a flying machine could be constructed which would move through the air at a certain given speed, when that speed was increased comparatively less propelling power would be necessary to prevent the machine's falling. This was at the very start an up-

setting of previous theories as to the force needed to sustain bodies moving through the air. It illustrates the difficulties with which in all stages of their work scientists interested in aerial navigation have had to contend. The principle just stated means, in simple language, that even so light and filmy a substance as the air will sustain a rapidly moving body, even of great weight, just as very thin ice sustains the weight of a man skating rapidly over it. This is a cardinal principle of air navigation. Upon it is based the possibility of a flying machine's moving in an almost horizontal direction. It eliminates the necessity for vacuums or gas reservoirs in aerial machines.

The most important principle upon which we have to work is that it takes much less force to push a body rapidly through the air than is needed to simply sustain it there. This is the very opposite of the principle of sea navigation that the faster a ship moves the greater propelling power is necessary. Upon the foregoing principles, we find that the primary necessity of the airship maker is to get his machine started through the air at great speed. Once having done this, he has gone a very long way. Space prevents an explanation of why it is so extremely difficult to get an airship safely started. Yet this is one of the most difficult problems in our progress of our experiments we established the following principles of our science, it became necessary to get them. We had to get the greatest possible motive force with the lightest practicable machinery. It was found that such a mechanism was a steam engine propelling wheels somewhat like the twin screws of a modern steamship, but placed amidships instead of at the stern. The commercial airship of the future must have a steam engine which will weigh, everything complete, less than ten pounds for every horse-power of force.

It is no fanciful statement, therefore, to assert that within the lifetime of millions of people now living flying machines operated upon mechanical principles, constructed mainly of metal with large rigid wings and propelling screws, will navigate the air for purposes of war, commerce and pleasure. My own interest in these labors of study and experiment has been purely scientific. The results I have obtained I can only hope will be useful to others. I have demonstrated the practicality of mechanical flight.

## A CENTURY OF ART BY CARROLL BECKWITH



verity which had replaced the more emotional work at the end of the eighteenth century.

We begin to feel another movement in French art as early as 1820, and a great ethical contest followed between classicism and romanticism. At this time the most distinguished English landscapist, Constable, drank the independent thought that was declaring itself in France.

We now enter upon the greatest period of French art, a period which will be recalled as the most brilliant of artistic productions during this century. The schools of fine art started by Napoleon, which were under governmental protection, were gradually increasing and enlarging, and home patronage became declared. As in this country to-day, so in England and France at the beginning of the century most of the art patronage was spent on foreign artists. Both England and France were for many years

in the beginning of the century lavish patrons of Italian art, after Italian imitation. But in the early 50's we find the eyes of both the French and English people turned upon their home producers. English portraiture is distinctly an exception to this, as royalty had placed its stamp of approval on portraiture from the sixteenth century.

From 1850 on we watch in France, England and Germany the steady and wholesale development in art. The increased wealth and power of these countries led the cultured people to enlarge their taste and add to their collections, it having been proven that financial investments in artistic productions, in painting and sculpture, were wise and remunerative.

We also notice in the 50's and 60's the first evidence of native art production in the United States. The school of landscape and figure painters of considerable

length and originality had been gradually forming, and for to and during the war the American artist was generally patronized. The works of many of these men, now old academicians, are highly prized by their owners and are gradually becoming the property of local museums.

As we approach the end of the century we feel a distinct decadence in French art, with the exception of its sculpture, which still remains the most remarkable since the Renaissance. The breaking into two factions of the Salon in 1889, the immense and ill-considered patronage of the French artists led to overconfidence and a tendency to sensationalism which has not been for the best in their progress.

Under the wise management of Sir Frederick Leighton, the Royal Academy in England has attained an importance which has made it one of the most powerful art bodies in the world.

As we approach the beginning of the twentieth century we realize that the great promise of the future lies in America. Our artists to-day have been educated in all of the best known schools. They have taken honors in the capitals of all the countries of the world and have returned to their native land bearing the fruits of their labor, possessed of great natural ability and unexampled training; that their productions should be essentially American is now being borne in upon them. And under the clear skies and with the wholesome surroundings and untrammelled means for future development, I am convinced that the great school of art in the twentieth century will be in America.

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